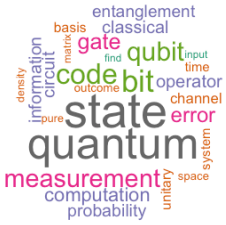

Contribution ID: **8** Type: **not specified**

Software for Large-Scale and Near-Term Quantum Computing

Wednesday, December 6, 2017 2:30 PM (1 hour)

In this talk, I will discuss our experiences with developing an open-source tool chain for large-scale quantum computing, and our plans for re-targeting these tools for near-term, small-scale physical prototypes.

The Scaffold tools are an extensive set of compilation and resource estimation tools for large-scale quantum computing. Scaffold leverages the LLVM compiler framework, as well as parallel mapping and quantum rotation generation tools. Scaffold was designed for scalability, targeting quantum machines with up to millions of quantum bits.

Scaffold has allowed us to explore a range of architectural and compiler issues and has contributed to many other research projects across the world. Our future efforts, however, will focus on specializing Scaffold to target smaller-scale machines. Specifically, we plan to expose more machine features and use deep optimization to help close the gap between practical algorithms and prototype machines.

Presenter: Dr CHONG, Fred (University of Chicago)